CHAPTER 1
INTRODUCTION

SECTION I. GENERAL INFORMATION

1.1 SCOPE.

This manual describes how to install, operate, and maintain the Multiple Integrated Laser Engagement System (MILES 2000), Tactical Engagement Simulation System (TESS), when configured with the M2/M3 Bradley Fighting Vehicle. The manual also explains all authorized operator maintenance. Refer any maintenance problems not covered to organizational maintenance personnel.

1.2 MAINTENANCE FORMS AND RECORDS.

Department of the Army forms and procedures used for equipment maintenance will be those described by DA PAM 738-750, The Army Maintenance Management System (TAMMS).

1.3 REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs).

If the MILES 2000 equipment for the M2/M3 System needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on a Quality Deficiency Report. Mail to us at Commander, Simulation, Training, and Instrumentation Command (STRICOM): ATTN: AMSTI-OPS-L: 12350 Research Parkway, Orlando, FL, 32826-3276. We will send you a reply.

1.4 CORROSION PREVENTION AND CONTROL.

a. Corrosion Prevention and Control (CPC) of Army material is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in the future.

b. While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials such as rubber and plastic. Unusual cracking, softening, swelling or breaking of these materials may be a corrosion problem.

c. If a corrosion problem is identified, it can be reported using form SF-368. Use of key words such as "corrosion", "rust", "deterioration", or "cracking" will assure that the information is identified as a CPC problem.

d. The form should be submitted to Commander, Simulation, Training, and Instrumentation Command (STRICOM): ATTN: AMSTI-OPS-L: 12350 Research Parkway, Orlando, FL, 32826-3276.

1.5 PREPARATION FOR STORAGE OR SHIPMENT.

When receiving equipment for storage or shipment, always inspect the returned equipment for damage, breaks, cracks, and cleanliness.

1.6 LIST OF ABBREVIATIONS AND GLOSSARY.

Refer to Table 1-1 for the list of abbreviations used in this manual and refer to Table 1-2 for the glossary.

Table 1-1. List of Abbreviations.

AAV	Assault Amphibious Vehicle
AC-DC	Alternating Current/Direct Current
ASAAF	Automatic Small Arms Alignment Fixture
ATWESS	Anti-Tank Weapons Effects Signature Simulator
AVCPS	Audio Visual Cue Pyrotechnic Simulator
BFA	Blank Firing Adapter
BIT	Built-In-Test
CD/TDTD (Controller Gun)	Controller Device/Training Data Transfer Device
CDA	Control Display Assembly
CPC	Corrosion Prevention and Control
CSWS	Crew Served Weapon System
CU	Control Unit
CVC	Combat Vehicle Crew
CVS	Combat Vehicle System
DC-DC	Direct Current/Direct Current
DIFCUE	Direct/Indirect Fire Cue
DPCU	Data Processing Control Unit
EIR	Equipment Improvement Recommendation
EOD	Explosive Ordnance Disposal
FCU	Fire Control Unit
FlashWESS	Flash Weapons Effects Signature Simulator
FU	Firing Unit
ID	Identification
I/O	Input/Output
IR	Infrared
ISU	Integrated Sight Unit
ITS	Independent Target System
IWS	Individual Weapons System
IWS Console (DPCU)	Individual Weapons System Console (Data Processing Control Unit)

Table 1-1. List of Abbreviations - Continued.

KSI	Kill Status Indicator
LAV	Light Armored Vehicle
LASER	Light Amplification by Simulated Emission of Radiation
LED	Light Emitting Diode
LTU	Laser Transmitter Unit
LU	Loader Unit
MARS	MILES After-Action Review System
MCS	Master Control Station
MG	Machine Gun
MGS	Missile Guidance System
MGSS	Main Gun Signature Simulator
MILES	Multiple Integrated Laser Engagement System
O/C	Observer Controller
OTPD	Optical Turret Positioning Device
PID	Player Identification
Pk	Probability of Kill
PMCS	Preventive Maintenance Checks and Services
PROM	Programmable Read-Only Memory
SAT	Small Arms Transmitter
SMAW	Shoulder-Mounted Assault Weapon
SWS	Surrogate Weapons System
TAMMS	The Army Maintenance Management System
TESS	Tactical Engagement Simulation System
TNB	Turret Network Box
TOW	Tube-Launched Optically-Tracked Wire-Guided Weapon System
ULT	Universal Laser Transmitter
Vac	Volts Alternating Current
Vdc	Volts Direct Current

Table 1-2. Glossary.

Administrative Kill	A kill assessed by a Controller for administrative purposes.
Automatic Small Arms Alignment Fixture (ASAAF)	Device used to align the Small Arms Transmitter (SAT) to the sights on a weapon.
Catastrophic Kill	A kill that totally disables a vehicle or individual.
Cheat Kill	A kill is assessed to a system when a tamper attempt has been detected.
Commo Kill	A kill that disables external communications.
Commo Override	Use the Control Unit **USER INFO/ENTER** push button to override the communications disable function under Communications/ Catastrophic Kill conditions in an emergency
Controller	An umpire or referee in a MILES 2000 training exercise.
Controller Device (CD/TDTD)	A device used by the Controller to upload, download and test the MILES 2000 system. (Controller Gun)
Direct/Indirect Fire Cue (DIFCUE)	A device that produces flash, noise, and smoke to simulate a vehicle being hit by direct or indirect fire.
Fastener Tape	A hook and pile type tape used to hold vehicle detector belts and other MILES 2000 equipment in place.
Firepower Kill	A kill that disables vehicle weapons.
Helmet Harness	The part of the IWS attached to the helmet or soft cover.
Hit	Simulated contact with incoming fire that does not result in a Kill.
Individual Weapons System (IWS)	The Helmet and Torso Harness assemblies and IWS Console (DPCU), which is worn by personnel. This equipment also includes the Small Arms Transmitter (SAT).
Kill	Refer to Catastrophic Kill, Commo Kill, Firepower Kill, or Mobility Kill
Kill Status Indicator (KSI)	A device attached to a vehicle that produces an external flashing light indicating a Hit, Near Miss or Kill.
LASER	Light Amplification by Simulated Emission of Radiation. A narrow beam of light capable of transmitting information.
Laser Beam	In MILES 2000 equipment, an eye-safe, invisible beam of light that simulates weapons fire.
Laser Detector	A device that senses incoming laser beams.
Laser Transmitter	A device that transmits a laser beam.
Main Gun Signature Simulator (MGSS)	A device that produces a flash and bang to simulate main gun firing.
Mobility Kill	A kill that disables the vehicle movement. The crew has 20 seconds to bring the vehicle to a stop. If motion is sensed after the 20 seconds, a Cheat Kill will occur.
Near Miss	Laser fire close enough to be sensed by a laser detector, but not close enough to cause a Hit or Kill.

Table 1-2. Glossary - Continued.

Optical Turret Positioning Device (OTPD)	A device that provides an optical reference signal to the turret detector belts (on applicable vehicles) to determine the turret position with reference to the hull.
Reset	Brings the system to the ready (alive) condition. In a CVS, the reset brings the system to a ready condition and returns ammunition to the default levels.
Resurrect	When a CVS is resurrected, the system is brought to a ready condition, but the ammunition levels remain as they were when the system was killed.
Small Arms Transmitter (SAT)	A laser transmitter used on various individual and vehicle-mounted rifles and machine guns.
Torso Harness	The part of the IWS that is worn on the upper body.
Universal Laser Transmitter (ULT)	A laser transmitter used on various combat vehicle systems mounted on the main gun and the coax machine gun.
Weapon Token	Is embedded in software and allows the IWS Console (DPCU) to enable a SAT. The Weapon Token is transmitted to the IWS when the system is reset/resurrected by the CD/TDTD. The SAT cannot be enabled without a Weapon Token and will not have one in the following conditions: system is killed or another SAT is enabled with the same Torso Harness.

NOTE

Army vehicle kits contain the SATs for the vehicle mounted weapons, but do not include IWS SATs.

1.7 SAFETY, CARE, AND HANDLING.

Before, during and after operation of equipment, read and adhere to all applicable WARNINGS and CAUTIONS. Perform all preventive maintenance checks and services as scheduled, and report any discrepancies as soon as possible. Use the proper tools and procedures for installation, troubleshooting, removal and replacement of components, and notify higher echelon maintenance personnel when warranted.

Although MILES 2000 consists of ruggedized equipment, designed to withstand extreme vibration, shock, and environmental stresses, treat the equipment with reasonable care; do not use excessive force when handling, packing, or stowing equipment. Responsible handling and use will help prolong the life cycle and appearance of the equipment.

SECTION II. EQUIPMENT DESCRIPTION AND DATA

1.8 EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

1.8.1 Equipment Characteristics. The MILES 2000 M2/M3 system permits the vehicle and crew to take part in realistic combat training exercises. Actual firing conditions of all vehicle weapons are simulated using laser beams. Blank ammunition, a Direct/Indirect Fire Cue (DIFCUE), and the ATWESS/FlashWESS add to the system's realism.

Laser detectors, mounted on the M2/M3 vehicles and worn by crew members, sense opposing fire. The MILES 2000 system electronics determines the accuracy and simulated damage of opposing fire. The system also detects the type of weapon directing fire against the vehicle.

1.8.2 Capabilities and Features.

a. Easily installed and removed.

b. Simulates firing capabilities of the M242 25 mm main gun, coax M240 machine gun, and TOW missiles.

c. Blank-Fire; DIFCUE, if used, and ATWESS/FlashWESS pyrotechnic charges add realism to weapon use.

d. Normal firing procedures used for all weapons.

e. Detects all incoming fire, identifies opposing weapons and Player ID (PID), and determines the effect of incoming fire on the using vehicle.

f. Uses eye-safe laser transmitters at designated distances.

g. Uses high visibility KSI strobe light signals vehicle Near Miss, Hit, or Kill.

h. Compatible with all other MILES devices.

1.9 LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

NOTE

MILES equipment installation procedures should be followed as outlined in the technical manual. If the following procedures CANNOT be followed due to cable length or additional vehicle equipment, then place the MILES equipment in the best and safest location.

a. Individual Weapons System (IWS): The IWS portion of the M2/M3 system consists of a Helmet Harness, a Torso Harness with IWS Console (DPCU), and fastener tape to secure the Helmet Harness. The harness set has the following:

(1) Detectors - receive coded messages from laser transmitters.

(2) Amplifier - amplifies coded messages received from incoming laser transmitters and forwards them to the IWS Console (DPCU) for decoding.

(3) Infrared (IR) Transmitter - transmits information which links the Torso Harness and the weapon's SAT.

(4) Audio Alarm [on the IWS Console (DPCU)] - indicates the laser signal received.

(5) Helmet Inductive Loop - transfers information from the Helmet Harness detectors to the Torso Harness, IWS Console (DPCU) for processing. The Helmet Harness Amplifier is powered by an internal 3.6-volt lithium battery with a three (3) year battery life.

(6) IWS Console (DPCU) - Data Process Control Unit for the IWS - provides user interface and decodes the laser and IR transmitted data for the IWS. Powered by a 9-volt battery with approximately 72 hours battery life (PN 147421), or by an internal 3.6-volt lithium battery with approximately 12-month battery life (PN 148245).

b. Vehicle Detector Belts and Amplifier: Two (2) vehicle detector belts provide detection coverage for each aspect of the vehicles vulnerability zones. The belts are installed around the TOW launcher and turret on the M2/M3.

c. Kill Status Indicator (KSI): The KSI is an integrated status indicator that provides information to an attacking vehicle. The KSI is composed of two major functional elements: a visual strobe and the decoder/interface electronics. The KSI also includes the interface inputs for the DIFCUE trigger, and the serial bus interface and the optical I/O port. The optical I/O port provides the optical interface to the Controller Device/Training Data Transfer Device (CD/TDTD) for transfer of vehicle types/PK data uploading and events downloading. The KSI also includes a motion sensor to detect vehicle motion after a Mobility Kill to allow the Control Unit (CU) to assess a Cheat Kill if vehicle motion occurs after 20 seconds. The KSI is mounted to the Integrated Sight Unit (ISU) of the M2/M3.

d. Main Gun Signature Simulator (MGSS) (if used): The FlashWESS is used in lieu of the MGSS on the M2/M3.

e. Direct/Indirect Fire Cue (DIFCUE), (if used): The optional DIFCUE consists of two (2) units: the Fire Control Unit (FCU) and the Firing Unit (FU). The DIFCUE simulates the vehicle receiving a direct/in-direct hit from incoming rounds. It gives an audio (bang) and visual (smoke) indication when a vehicle is hit. The DIFCUE FU is installed on the bustle rack of the M2/M3, in the place of ammo can #5. The FCU is installed next to the intercom box on the right side wall of the commander's station in the M2/M3.

f. Coax Microphone: Picks up the sound of the blank fire causing the ULT on the main gun to fire. The Coax Microphone is mounted on the gas tube under the barrel of the coax machine gun.

g. Universal Laser Transmitter (ULT): The ULT is a laser transmitter for use with the 25 mm main gun, TOW missile, and coax machine gun on the M2/M3. The transmitter has adjustable laser power that is set to a level representative of the weapon being simulated. The assembly is mounted to an adapter which in turn is mounted on the barrel collar of the main gun. The coax microphone picks up the sound of blank fire, which causes the ULT on the main gun to fire.

h. Control Unit (CU): Contains all the primary user interface functions, displays and controls. Weapon selection, loading/reloading of ammunition, and weapon status are functions provided by the CU. In the M2/M3, it is attached above the weapon control box with fastener tape. The CU is capable of being configured for three (3) types of ammunition: APFSDS, HEAT, and STAFF.

i. Power Controller: The Power Controller assembly provides 24 Vdc, the charging voltage for the internal lead acid batteries, as well as power to the MILES 2000 system. The 24-volt battery is converted to 10.5 Vdc output by a DC-DC converter for use by the MILES 2000 kit, and provides backup power for 100 hours. The battery also supplies power to the KSI for a 10 minute time period in the event the vehicle's power is turned off and the vehicle is killed. The Power Controller is

installed on top of the HE Ready Box.

j. Loader Unit (LU): There is no LU in the M2/M3.

k. Optical Turret Positioning Device (OTPD): The OTPD transmits a MILES code and unique PID to the detector belts located on the vehicle in order to determine turret position with reference to the hull. The OTPD is powered by a 9-volt battery, and attaches to the TOW missile weapon hatch using fastener tape.

l. TOW Simulator Tube: TOW Simulator Tube is used to represent the encased missile. The simulator tube contains the Anti-Tank Weapons Effect Signature Simulator (ATWESS) and simulates the effects of firing the TOW.

1.10 EQUIPMENT DATA.

Table 1-3 defines the equipment data.

Table 1-3. Equipment Data.

EQUIPMENT	WEIGHT (POUNDS)	DIMENSIONS L x W x D (INCHES)	MAX EFFECTIVE RANGE (METERS)
25 mm/TOW/Coax Machine Gun ULT	7.7	3.2 x 4.5 x 16	3000/3750/900
TOW Simulator Tube	26.2	48.6 x 8.12	
EQUIPMENT	**WEIGHT (POUNDS)**	**DIMENSIONS L x W x D (INCHES)**	**NOTES**
Right Front Detector Belt	4.0	341.88 x 2.0	
Left Rear Detector Belt	4.0	282.99 x 2.0	
IWS Helmet Harness	0.9	7.6 x 3.4 x 1.7	
IWS Torso Harness	3.3	24.0 x 7.6 x 1.7	
IWS Console (DPCU)	0.9	3.1 x 2.4 x 1.4	
Kill Status Indicator (KSI)	4.7	8.4 x 8.5 x 6.4	
Control Unit (CU)	1.0	4.2 x 5.4 x 2.2	
Power Controller	7.9	6.1 x 5.9 x 3.0	
Optical Turret Positioning Device (OTPD)	1.01	2.0 x 6.3 (dia)	

SECTION III. THEORY OF OPERATION

1.11 BASIC PRINCIPLES OF OPERATION.

1.11.1 Principles of Operation (MILES 2000). The MILES 2000 system uses laser beams to simulate actual weapons fire. An eye-safe invisible laser beam is sent out by each weapons transmitter when it is fired. The laser beam is coded and simulates all of the weapons capabilities including range, accuracy, and destructive capability.

Laser detector systems are used to sense opposing fire. The detector systems register incoming laser beams and determine whether they have scored a Near Miss, Hit, or Kill. Incoming fire can result in more than one type of a Hit or Kill. Types of hits or kills include Mobility, Communications, Firepower, or a Catastrophic Kill of the entire vehicle.

Table 1-4 defines the Kill Indication Chart.

1.11.2 Principles of Operation (M2/M3 Bradley). All weapons on the M2/M3 Bradley Fighting Vehicle (Figure 1-1) are equipped with laser transmitters that are fired using normal weapon operating procedures. The turret has detector belts attached that sense opposing fire. A CU mounted inside displays the extent of opposing fire and its effect. The Kill Status Indicator (KSI) mounted on the vehicle's turret is activated by the CU when incoming fire is detected. It also has a Flash Weapon Effects Signature Simulator (FlashWESS) which simulates a non-pyrotechnic visual cue of the fire rate of a 25 mm weapon.

1.11.2.1 Main Gun Firing. The M242 25mm main gun is fired using normal procedures. A strobe light located in the ULT is used to add realism to the main gun firing. When the trigger is operated, both the strobe light and the ULT, mounted on the 25mm gun, are fired together.

The MILES 2000 system allows a basic load of 1500 rounds (350 AP; 1150 HE) for the 25 mm gun. The CU displays the number of rounds the MILES 2000 system has left. The Gunner can load up to 200 AP rounds or 300 HE rounds in 50 round increments.

1.11.2.2 IWS System. Each crew member of the M2/M3, except the driver, wears a Helmet Harness equipped with laser detectors, a Torso Harness equipped with laser detectors and a IWS Console (DPCU) with an audio alarm. When the detectors on the IWS system sense incoming fire, one of three things will happen:

a. If the alarm on the IWS Console (DPCU) sounds briefly two (2) times - a Near Miss occurred.

b. If the SAT has been enabled and the soldier has been killed, the alarm on the IWS Console (DPCU) will sound continuously until the SAT has been located and disabled.

c. If the alarm on the IWS Console (DPCU) sounds briefly four (4) times - the IWS has been reset by the controller.

1.11.2.3 Detector Belt System. Two (2) detector belts are mounted on the turret of the M2/M3, which sense incoming fire. Each belt is electrically divided into two (2) zones for a total of four (4) zones, which represent the sides of the vehicle. They generate electrical signals that are fed to a decoder in the KSI.

1.11.2.4 Kill Status Indicator (KSI). Receives MILES messages from the detector belts, decodes them and then routes all valid messages to the Control Unit (CU). It has an optical port for external interface with the CD/TDTD, a motion sensor, and provides trigger signal to the DIFCUE. Mounted to provide 360E visibility of the flashing light. Refer to Table 1-4, Kill Indication Chart for a list of the types of kills and the KSI indications.

1.11.2.5 Direct/Indirect Fire Cue (DIFCUE). The DIFCUE Firing Unit (FU) is mounted to a specified location depending on the vehicle configuration. The DIFCUE discharges a round only when a Catastrophic Kill is assessed.

Table 1-4. Kill Indication Chart.

Type of Hit/Kill	Number of KSI Flashes	Audible Indication
Vehicle		
SMAW Spotting Rifle	1 Flash	None
Near Miss	2 Flashes	Near Miss
Hit	4 Flashes	Hit
Mobility Kill	4 Flashes	Hit, Mobility. Stop Vehicle. (The crew has 20 seconds to bring the vehicle to a stop.)
Fire Power Kill	4 Flashes	Hit, Fire Power
Communications Kill	4 Flashes	Hit, Commo Kill. (Disables external communications only)
Catastrophic Kill	Flashes Continuously	Vehicle Kill
Administrative Kill	Flashes Continuously	Vehicle Kill
Cheat Kill	Flashes Continuously	Cheat Kill
Reset	1 Flash	Reset/Resurrect
IWS		
Near Miss	N/A	2 Beeps
Kill	N/A	Continuous
Administrative Kill	N/A	Continuous
Cheat Kill	N/A	Continuous
Reset	N/A	4 Beeps

Notes: Cheat Kill will occur during a Mobility Kill if the vehicle does not stop within the allotted 20 seconds or moves after it has stopped. A Cheat Kill will occur when disconnecting any of the following pieces of vehicle equipment: KSI, any Detector Belt/Array, or Power Controller (must be reconnected for cheat to be indicated), or removing the battery on IWS Console (DPCU).

In the event of a Catastrophic or Communications Kill, external communications can be over-ridden for **EMERGENCIES ONLY** by pressing the USER INFO push button on the Control Unit, selecting communication override and pressing the ENTER push button.

1.11.2.6 Coax Microphone. The Coax Microphone picks up the sound of the blank fire, which causes the ULT on the main gun to fire. The Coax Microphone is mounted on the gas tube under the barrel of the coax machine gun in the 9 o'clock position to provide proper clearance between the Coax Microphone and the armor plate on the vehicle.

1.11.2.7 Universal Laser Transmitter (ULT). The ULT has the capability of adjusting laser power to simulate the range of various weapon types. It is boresighted using two knobs located on the rear of the ULT. It also has a Flash Weapon Effects Signature Simulator (FlashWESS) which simulates a non-pyrotechnic visual cue of the fire rate of a 25 mm weapon.

1.11.2.8 TOW System. The TOW system is fired using normal procedures. The launcher is equipped with two (2) TOW simulator tubes. The TOW Simulator Tubes are loaded with Anti-Tank Weapons Effect Signature Simulator (ATWESS) cartridges. When the TOW is fired, the ATWESS cartridges detonate providing noise, flash, and smoke simulation of an actual missile launch. The laser transmitter fires after the ATWESS device. The TOW sight must be used to track the target for fifteen (15) seconds to obtain a hit or kill status. A hit or kill indicates that the gunner has properly tracked the target and the fifteen (15) seconds simulates a tracking time of an actual missile. After firing the TOW, the number of remaining TOW rounds can be displayed on the CU.

1.11.2.9 Control Unit (CU). The CU provides the following: casualty assessment using Probability of Kill (Pk) tables, records/stores event data (500 events max), provides system real time clock, monitors system for hardware failures and for cheat attempts, commands KSI to flash, and interrupts vehicle external communications during Communications/Catastrophic kills.

1.11.2.10 Power Controller. The Power Controller contains a rechargeable battery pack and operates from the vehicle power to maintain the battery charge. It automatically switches to the internal battery to provide power when the vehicle power drops lower than the internal battery power, or when the vehicle power is removed from the MILES 2000 system.

1.11.2.11 Optical Turret Positioning Device (OTPD). An OTPD located on the center of TOW missile ammunition loading hatch allows the CU to calculate and adjust the effect of laser fire on the tank. The OTPD sends IR signals to the laser detectors on the turret, letting the CU know the relationship between any side of the turret and the hull. When a specific part of the turret is hit with laser fire, the CU determines which side of the hull is facing the fire.

Table 1-5 defines the Kit/Equipment List.

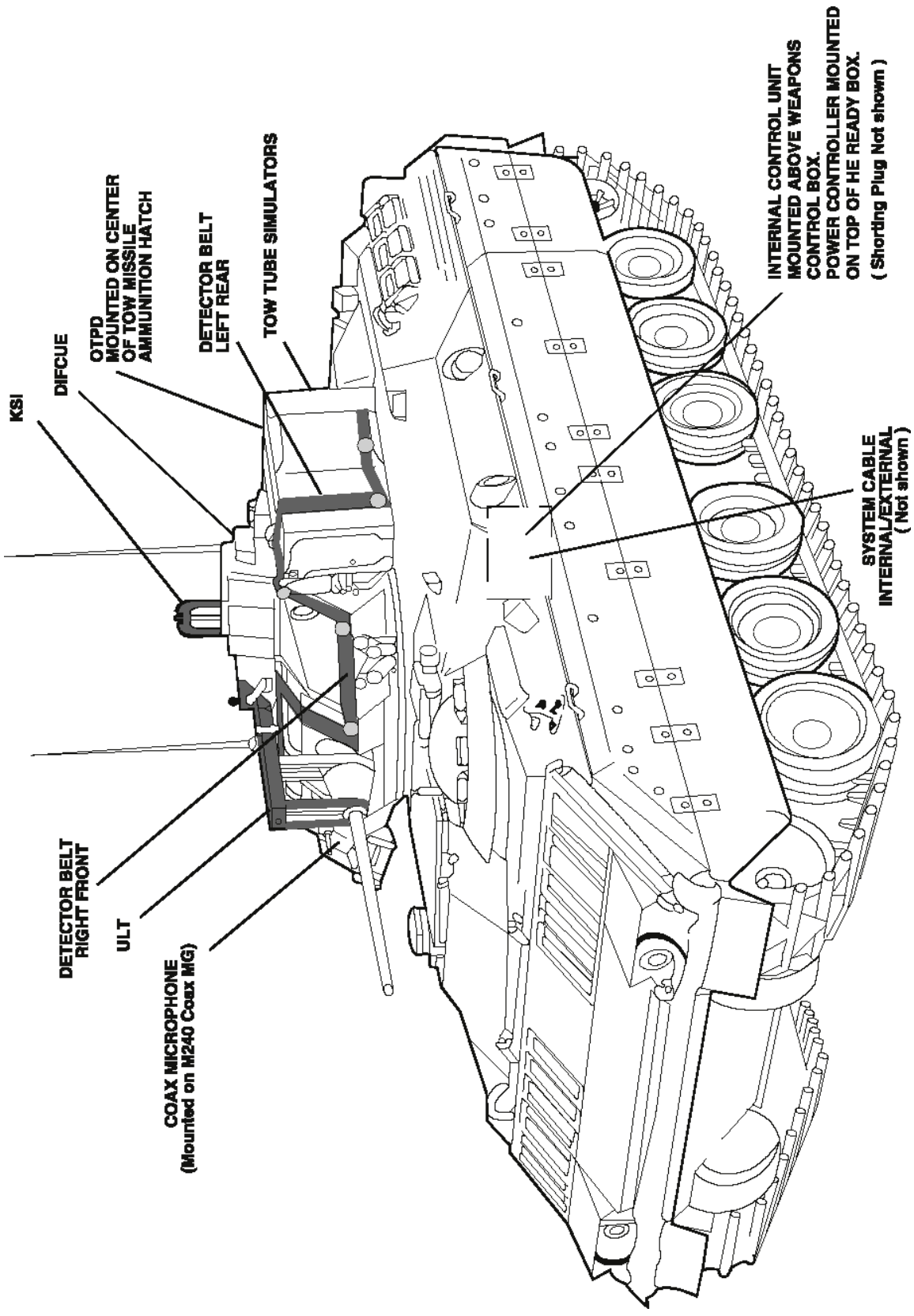

Figure 1-1. M2/M3 Bradley Fighting Vehicle.

Table 1-5. Kit/Equipment List.

PACKAGE NOMENCLATURE: SIMULATION SYSTEM, M2/M3				
PACKAGE PERTAINS TO: 146550-1				
PACKAGE CONTENTS				
QUANTITY	NAME OF ITEM	DWG NO.	PART NO.	NOTES
1	CONTROL UNIT ASSEMBLY	146402	146402-1	
1	OPTICAL TURRET POSITION DEVICE ASSY	146408	146408-1	
1	POWER CONTROLLER ASSY	146409	146409-1	
1	CABLE ASSY, COAX MICROPHONE	146430	146430-1	
1	ULT/ADAPTER ASSY, 25MM	146609	146609-1	
1	CABLE ASSY, INTERNAL/EXTERNAL M2/M3	146555	146555-1	
1	KIT, TOW TUBE, M2/M3	146557	146557-1	
1	DETECTOR BELT ASSY, LEFT-REAR M2/M3	146560	146560-1	
1	DETECTOR BELT ASSY, RIGHT-FRONT M2/M3	146562	146562-1	
1	MAST ASSY, KSI-M2/M3	146572	146572-1	
3	DETECTOR ASSEMBLY, TORSO	147421	147421-1	
3	DETECTOR ASSEMBLY, HELMET	147422	147422-1	
1	PLUG, SHORTING	9352767	9352767	5
1	FLOOR PLATE, M2/M3	11835295	11835295	5
8	WEDGE ASSY, DETECTOR BELTS	146435	146435-1	
1	TRANSIT CASE, M2/M3	146556	146556-1	4
AR	OPERATOR'S MANUAL		TD 9-6930-703-10	
1	GROMMET, PERISCOPE SEAL	146509	146509-7	
4	STRAP, BLK, 3" X 6"			1
4	STRAP, BLK, 3/4" X 8"			2
2	STRAP, BLK, 3/4" X 12"			3

NOTES:

1. MAY BE PURCHASED IN BULK QUANTITY AS PART OF VELCRO USA, CAGE CODE 11153, PART NO. 170790. THIS REEL CONSISTS OF1200 STRAPS.
2. MAY BE PURCHASED IN BULK QUANTITY AS PART OF VELCRO USA, CAGE CODE 11153, PART NO. 170091. THIS REEL CONSISTS OF 900 STRAPS.
3. MAY BE PURCHASED IN BULK QUANTITY AS PART OF VELCRO USA, CAGE CODE 11153, PART NO. 170782. THIS REEL CONSISTS OF 600 STRAPS.
4. MARK THE TRANSIT CASE (2 PLACES) WITH THE APPLICABLE DASH NUMBER AFTER THE BASIC PART NUMBER. THE MARKING SHALL BE 6.35mm HIGH CHARACTERS MINIMUM, COLOR WHITE NO. 27925 IN ACCORDANCE WITH FED-STD-595, LOCATE AS SHOWN ON TRANSIT CASE DRAWING
5. CAGE CODE 19200.

See Figures 1-2 and 1-3 located at the end of this table.

Table 1-5. Kit/Equipment List - Continued.

PACKAGE NOMENCLATURE: SIMULATION SYSTEM, M2/M3				
PACKAGE PERTAINS TO: 146550-2				
PACKAGE CONTENTS				
QUANTITY	NAME OF ITEM	DWG NO.	PART NO.	NOTES
1	CONTROL UNIT ASSEMBLY	146402	146402-1	
1	OPTICAL TURRET POSITION DEVICE ASSY	146408	146408-1	
1	POWER CONTROLLER ASSY	146409	146409-1	
1	CABLE ASSY, COAX MICROPHONE	146430	146430-1	
1	ULT/ADAPTER ASSY, 25MM	146609	146609-2	
1	CABLE ASSY, INTL/EXT-M2/M3, VIS	146507	146507-1	
1	KIT, TOW TUBE, M2/M3	146557	146557-1	
1	DETECTOR BELT ASSY, LEFT-REAR M2/M3	146560	146560-1	
1	DETECTOR BELT ASSY, RIGHT-FRONT M2/M3	146562	146562-1	
1	MAST ASSY, KSI-M2/M3	146572	146572-2	
3	DETECTOR ASSEMBLY, TORSO	147421	147421-2	
3	DETECTOR ASSEMBLY, HELMET	147422	147422-2	
1	PLUG, SHORTING	9352767	9352767	5
1	FLOOR PLATE, M2/M3	11835295	11835295	5
8	WEDGE ASSY, DETECTOR BELT	146435	146435-1	
1	TRANSIT CASE, M2/M3	146556	146556-1	4
AR	OPERATOR'S MANUAL		TD 9-6930-730-10	
1	GROMMET, PERISCOPE SEAL	146509	146509-7	
4	STRAP, BLK, 3" X 6"			1
4	STRAP, BLK, 3/4" X 8"			2
2	STRAP, BLK, 3/4" X 12"			3

NOTES:

1. MAY BE PURCHASED IN BULK QUANTITY AS PART OF VELCRO USA, CAGE CODE 11153, PART NO. 170790. THIS REEL CONSISTS OF1200 STRAPS.
2. MAY BE PURCHASED IN BULK QUANTITY AS PART OF VELCRO USA, CAGE CODE 11153, PART NO. 170091. THIS REEL CONSISTS OF 900 STRAPS.
3. MAY BE PURCHASED IN BULK QUANTITY AS PART OF VELCRO USA, CAGE CODE 11153, PART NO. 170782. THIS REEL CONSISTS OF 600 STRAPS.
4. MARK THE TRANSIT CASE (2 PLACES) WITH THE APPLICABLE DASH NUMBER AFTER THE BASIC PART NUMBER. THE MARKING SHALL BE 6.35mm HIGH CHARACTERS MINIMUM, COLOR WHITE NO. 27925 IN ACCORDANCE WITH FED-STD-595, LOCATE AS SHOWN ON TRANSIT CASE DRAWING.
5. CAGE CODE 19200.

See Figures 1-2 and 1-3 located at the end of this table.

Table 1-5. Kit/Equipment List - Continued.

PACKAGE NOMENCLATURE: SIMULATION SYSTEM, M2/M3				
PACKAGE PERTAINS TO: 146550-3				
PACKAGE CONTENTS				
QUANTITY	NAME OF ITEM	DWG NO.	PART NO.	NOTES
1	CONTROL UNIT ASSEMBLY	146402	146402-1	
1	OPTICAL TURRET POSITION DEVICE ASSY	146408	146408-1	
1	POWER CONTROLLER ASSY	146409	146409-2	
1	CABLE ASSY, COAX MICROPHONE	146430	146430-1	
1	ULT/ADAPTER ASSY, 25MM	146609	146609-2	
1	CABLE ASSY, INTL/EXT-M2/M3 VIS	146507	146507-1	
1	KIT, TOW TUBE, M2/M3	146557	146557-1	
1	DETECTOR BELT ASSY, LEFT-REAR M2/M3	146560	146560-1	
1	DETECTOR BELT ASSY, RIGHT-FRONT M2/M3	146562	146562-1	
1	MAST ASSY, KSI-M2/M3	146572	146572-2	
3	DETECTOR ASSEMBLY, TORSO	148245	148245-1	
3	DETECTOR ASSEMBLY, HELMET	148246	148246-1	
1	PLUG, SHORTING	9352767	9352767	5
1	FLOOR PLATE, M2/M3	11835295	11835295	5
8	WEDGE ASSY, DETECTOR BELTS	146435	146435-1	
1	TRANSIT CASE, M2/M3	146556	146556-1	4
AR	OPERATOR'S MANUAL		TD 9-6930-703-10	
1	GROMMET, PERISCOPE SEAL	146509	146509-7	
4	STRAP, BLK, 3" X 6"			1
4	STRAP, BLK, 3/4" X 8"			2
2	STRAP, BLK, 3/4" X 12"			3

NOTES:

1. MAY BE PURCHASED IN BULK QUANTITY AS PART OF VELCRO USA, CAGE CODE 11153, PART NO. 170790. THIS REEL CONSISTS OF1200 STRAPS.
2. MAY BE PURCHASED IN BULK QUANTITY AS PART OF VELCRO USA, CAGE CODE 11153, PART NO. 170091. THIS REEL CONSISTS OF 900 STRAPS.
3. MAY BE PURCHASED IN BULK QUANTITY AS PART OF VELCRO USA, CAGE CODE 11153, PART NO. 170782. THIS REEL CONSISTS OF 600 STRAPS
.
4. MARK THE TRANSIT CASE (2 PLACES) WITH THE APPLICABLE DASH NUMBER AFTER THE BASIC PART NUMBER. THE MARKING SHALL BE 6.35mm HIGH CHARACTERS MINIMUM, COLOR WHITE NO. 27925 IN ACCORDANCE WITH FED-STD-595, LOCATE AS SHOWN ON TRANSIT CASE DRAWING.
5. CAGE CODE 19200.

See Figures 1-2 and 1-3 located at the end of this table.

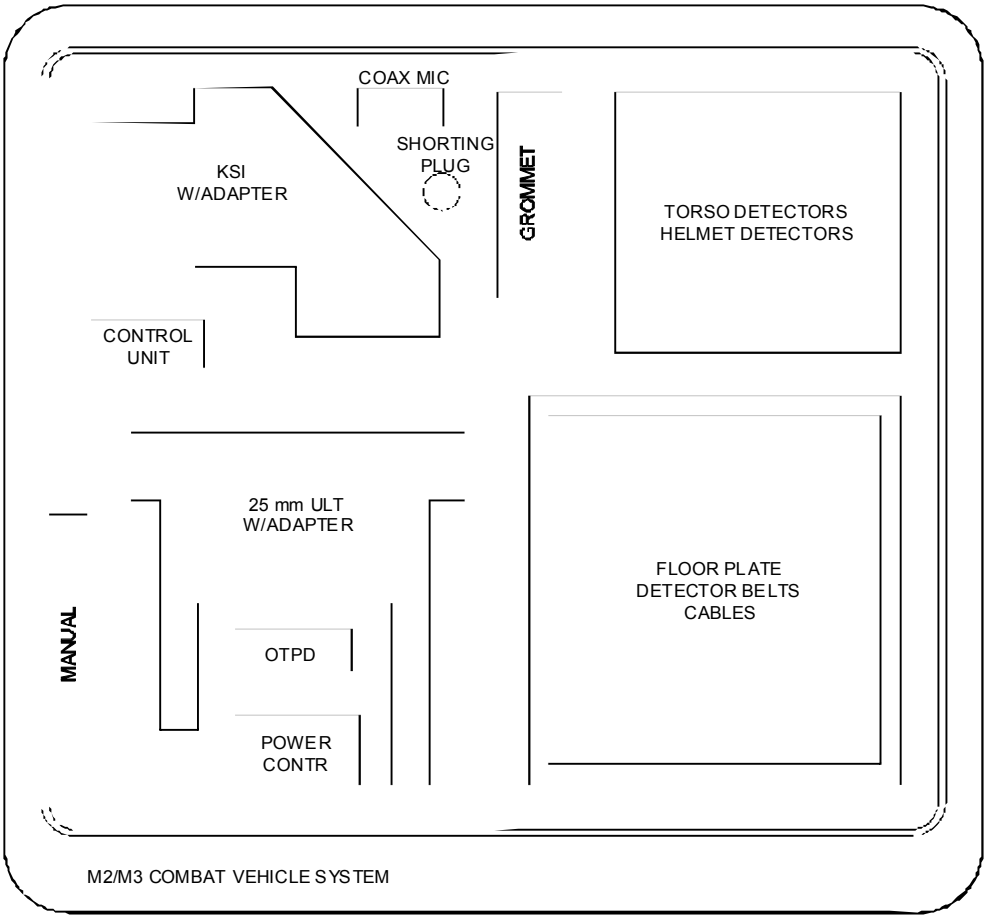

Figure 1-2. M2/M3 Combat Vehicle System Transit Case.

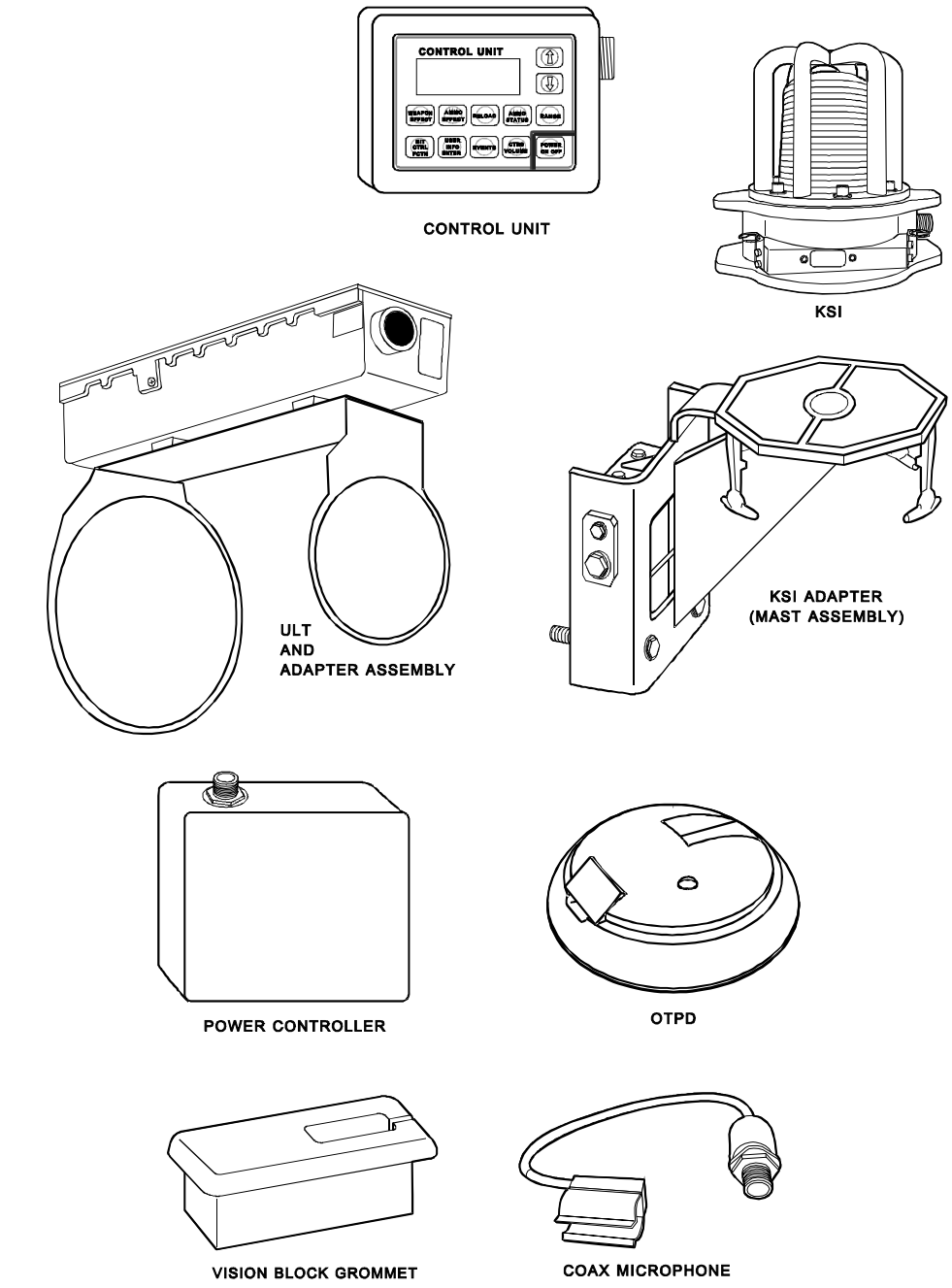

Figure 1-3. M2/M3 CVS System Components (Items not to Scale) (Sheet 1 of 2).

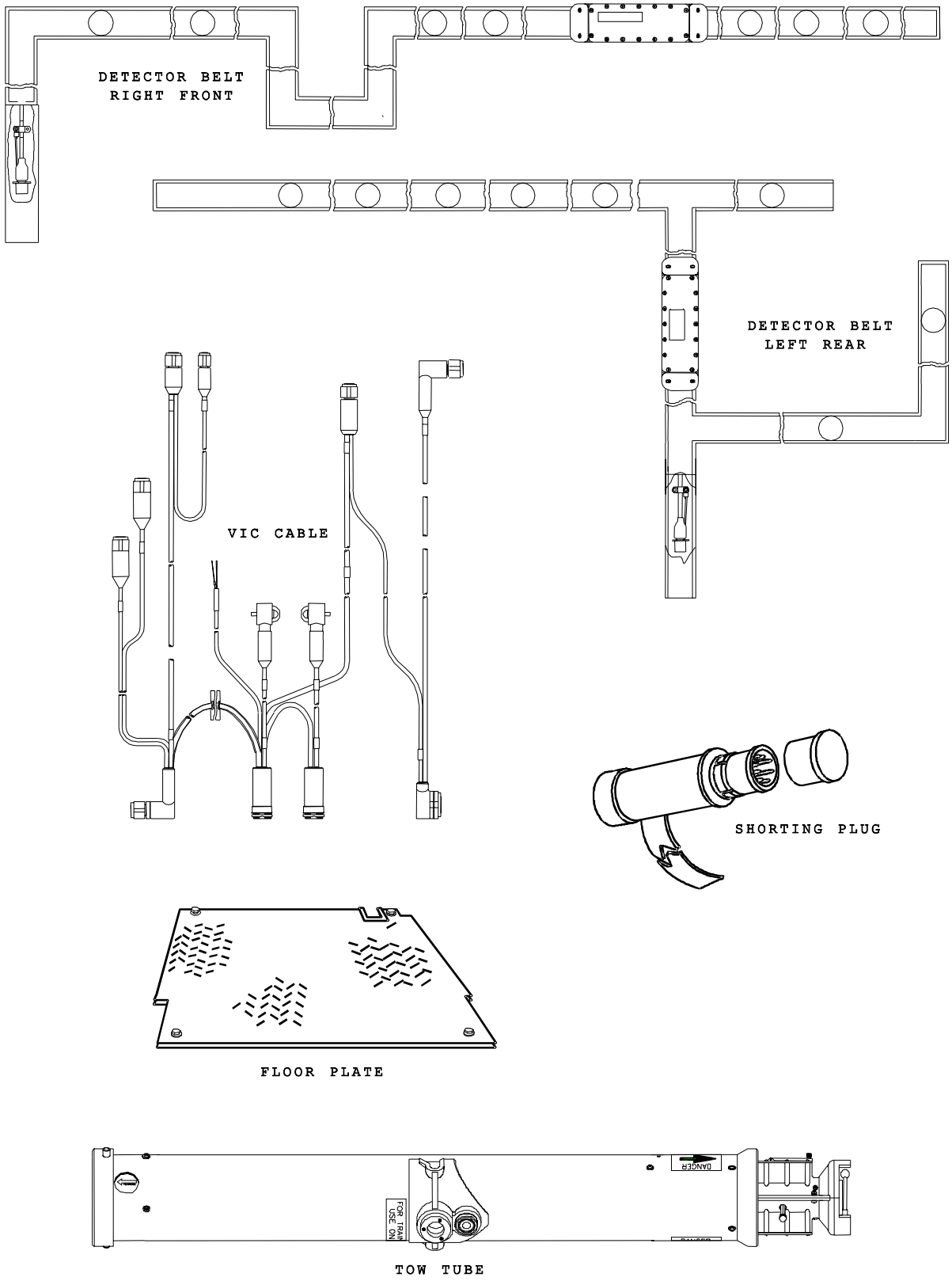

Figure 1-3. M2/M3 CVS System Components (Items not to Scale) (Sheet 2 of 2).